2000-01 MANUAL A/C-HEATER SYSTEMS

ML 320, ML 430 & ML 55

SPECIFICATIONS

SPECIFICATIONS

Application	Specification
Compressor Type	Nippondenso 7SB16 7-Cyl.
Compressor Belt Tension	(1)
Compressor Oil Capacity	(2) 5.6-6.3 ozs.
Refrigerant (R-134a) Capacity	26.4 ozs.
System Operating Pressures	(3)

(1) Belt tension is automatically adjusted by belt tensioner.

(2) Use Densooil 8 (A 001 989 08 03).

(3) Information is not available from manufacturer.

DESCRIPTION & OPERATION

WARNING: **To avoid injury from Accidental air bag deployment, read and carefully follow all SERVICE PRECAUTIONS and DISABLING & ACTIVATING AIR BAG SYSTEM procedures in AIR BAG SYSTEM SAFETY article in GENERAL SERVICING.**

A/C CONTROL PANEL

The A/C control panel contains switches to control A/C functions such as blower motor speed, mode control, in-vehicle temperature, A/C on/off, and fresh/recirculated air control. See **Fig. 1** .

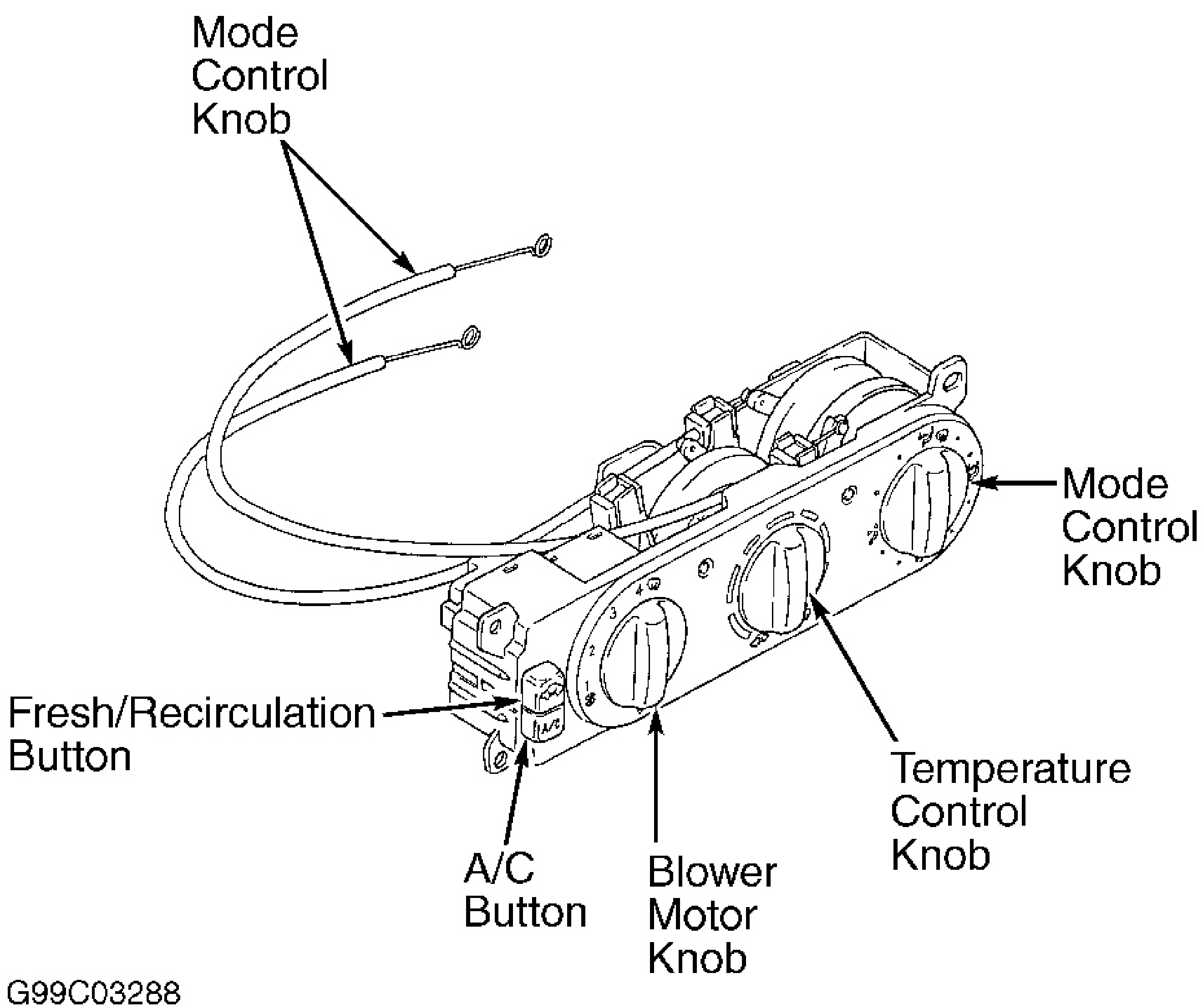


Fig. 1: Identifying A/C Control Panel Functions
Courtesy of MERCEDES-BENZ OF NORTH AMERICA

BLOWER MOTOR KNOB

Located in the A/C control panel, the blower motor knob controls blower motor speed in 4 settings. See **Fig. 1** . The blower motor knob sends a voltage signal through the blower motor resistor in "1" to "3" positions and by-passes blower motor resistor in position No. 4. See **WIRING DIAGRAMS** . Setting blower motor knob to "0" position will turn system off.

MODE CONTROL KNOB

Mode control knob controls air distribution throughout the passenger compartment. Air distribution doors are controlled by cables activated by the mode control knob. See **Fig. 1** . Four mode positions are available with detents in-between to adjust airflow for personal comfort.

Defrost

Set mode control knob to 12-o'clock position. Air will exit from defrost outlets and side window vents.

Vent

Set mode control knob to 9-o'clock position. Air will exit from instrument panel outlets.

Floor

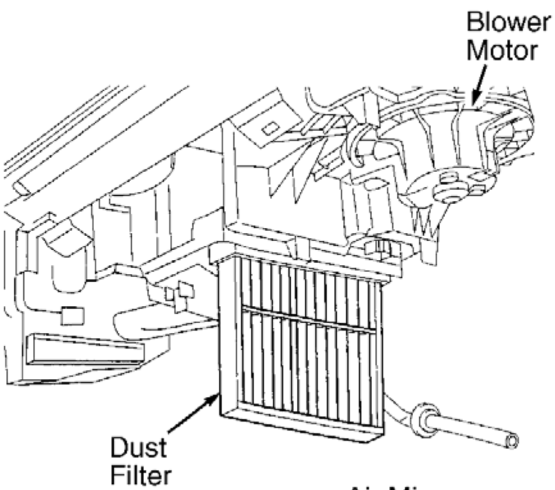
Set mode control knob to 6-o'clock position. Air will exit from floor outlets.

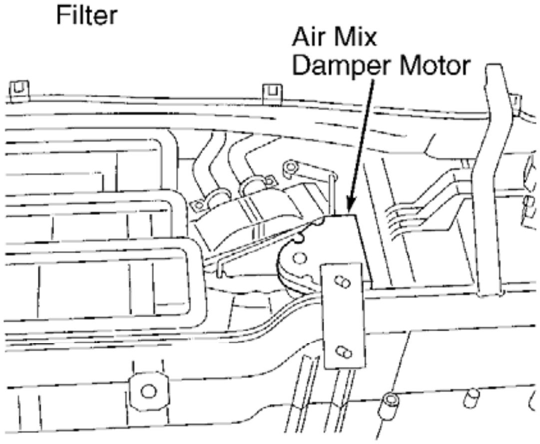
Blend/Bi-Level

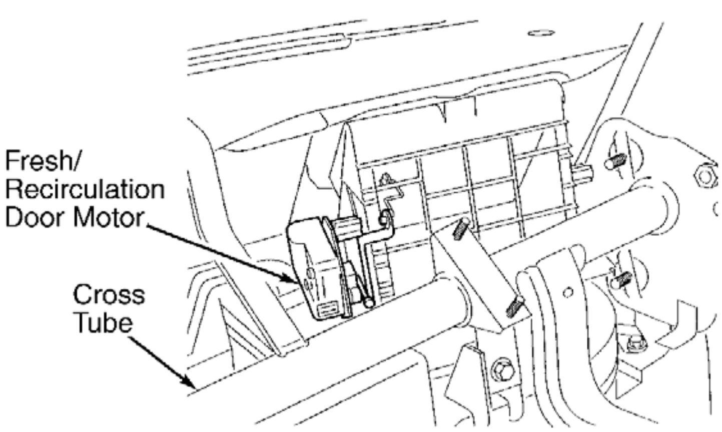
Set mode control knob to 3-o'clock position. Air will exit from defrost, instrument panel, and floor outlets.

TEMPERATURE CONTROL KNOB

Air temperature is controlled by a variable resistor rotary control switch. See **Fig. 1** . Switch receives voltage signal and depending upon position, controls voltage signal sent to air mix damper door motor. See **Fig. 2** . Voltage controls position of motor for heating and cooling.


Blower Motor
Dust Filter


Air Mix Damper Motor


Fresh/ Recirculation Door Motor
Cross Tube

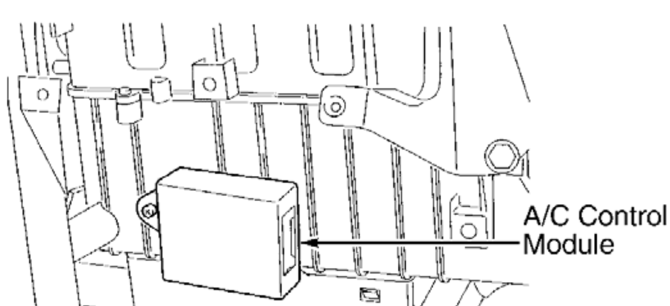

A/C Control Module

Fig. 2: Locating Climate Control Components
Courtesy of MERCEDES-BENZ OF NORTH AMERICA

FRESH/RECIRCULATION SWITCH

Fresh/recirculation switch controls voltage signal to fresh air recirculation door motor. See **Fig. 1** and **Fig. 2** . With switch indicator light on, air will recirculate. With switch indicator light off, air will enter from outside of vehicle.

A/C CONTROL MODULE

The A/C control module (A/C amplifier) is the control unit for the A/C system. See **Fig. 2** . The module receives inputs from various sensors and processes the information to control various outputs for the A/C system for optimal control.

The A/C control module inputs are as follows:

- A/C Switch
- In-Vehicle Air Temperature Sensor
- Temperature Selector Knob
- Blower Motor Knob
- Evaporator Temperature Sensor
- Air Mix Damper Door Position Sensor

The A/C control module output functions are as follows:

- Air Mix Damper Door Motor
- All Activity Module
- Fresh/Recirculation Door Motor

ALL ACTIVITY MODULE

All Activity Module (AAM) receives inputs to determine if specified conditions have been met to allow operation of A/C-heater system. If conditions are met, the AAM will send signals to the A/C compressor, condenser fans relay and the blower motor relay to command or enable operation.

IN-VEHICLE TEMPERATURE SENSOR

The in-vehicle temperature sensor is a negative temperature coefficient resistor. Sensor sends signals to the A/C control module to maintain in-vehicle temperature. Sensor is located on the center panel of the instrument cluster.

DUST FILTER

A dust filter provides filtering of air entering or recirculating in the passenger's compartment. The dust filter is mounted between blower motor and evaporator, below passenger's side of instrument panel, to left of blower

motor. See **Fig. 2** .

PROGRAMMING

RECODING RADIO

CAUTION: Before disconnecting battery, obtain 5-digit radio security code from vehicle owner. Radio will be disabled until properly recoded.

NOTE: Radio will not operate if power supply to radio is interrupted. Obtain 5-digit radio security code from vehicle owner before disconnecting battery.

1. Turn ignition on. Ensure CODE is displayed on radio display. Enter code numbers using radio station buttons. For example, use station button No. 1 for code No. 1 and so on.
2. After first number is entered, CODE disappears and number entered is displayed followed by 4 dashes. After entering 5-digits, confirm correct security code has been entered. If incorrect code has been entered, entire code must be reentered.
3. Confirm entry of correct security code using "<" (less than) or ">" (more than) buttons. If an incorrect code is entered, CODE will be displayed on radio display. If security code is entered incorrectly 3 times, WAIT will be displayed and radio will be disabled for about 10 minutes.
4. If, after 3 more attempts, correct security code has not been entered, radio will be disabled for 60 minutes. Radio disable time runs down only when radio is turned off.

VERSION CODING

Version coding is performed using a Mercedes-Benz Hand-Held Tester (HHT) and is on-screen menu guided. After connecting HHT to DLC, vehicle communication is possible as soon as ignition key is inserted into ignition switch (position of switch does not matter). Version coding menu, position 1, is reached via main menu and control module adaptation, position 5. There are 2 possible version codings available: readout of version code and transfer to new control module or readout of version code and to alter code.

To access A/C system version coding, position 2 must be selected and then position 7 for A/C system. Two selections can be used: A/C system is installed or A/C system is not installed.

SELF-DIAGNOSTICS

RETRIEVING & ERASING DIAGNOSTIC TROUBLE CODES

Retrieving and erasing of Diagnostic Trouble Codes (DTC) must be performed using Mercedes-Benz Hand-Held Tester (HHT). See HHT instructions for retrieving A/C-heater system related DTC. After noting codes, see **CLIMATE CONTROL DTC** table. To erase DTC, follow HHT instructions.

When retrieving DTC from A/C push button control module, short and open circuits cannot be differentiated from each other in every instance. When accessing DTC from any control module memory, all stored DTC are shown. As a result, some DTC shown will not apply to climate control system.

CLIMATE CONTROL DTC

DTC	Possible Cause
B1232	[1] Refrigerant Pressure Sensor
B1419	Electromagnetic Clutch
[1] Check A/C refrigerant pressure sensor. See **A/C REFRIGERANT PRESSURE SWITCH** under ELECTRICAL TESTS.	

SYSTEM TESTS

WARNING: **To avoid injury from Accidental air bag deployment, read and carefully follow all SERVICE PRECAUTIONS and DISABLING & ACTIVATING AIR BAG SYSTEM procedures in AIR BAG SYSTEM SAFETY article in GENERAL SERVICING.**

CONNECTING TEST EQUIPMENT

Remove radio to gain access to A/C push button control unit harness connector. Turn ignition off. Disconnect control unit harness connector. Connect socket box Test Cable (163 589 01 63 00) to A/C push button control unit and wiring harness. See **Fig. 3** . Connect test cable to Socket Box (124 589 00 21 00). Connect test equipment leads to socket box terminals as instructed in circuit tests.

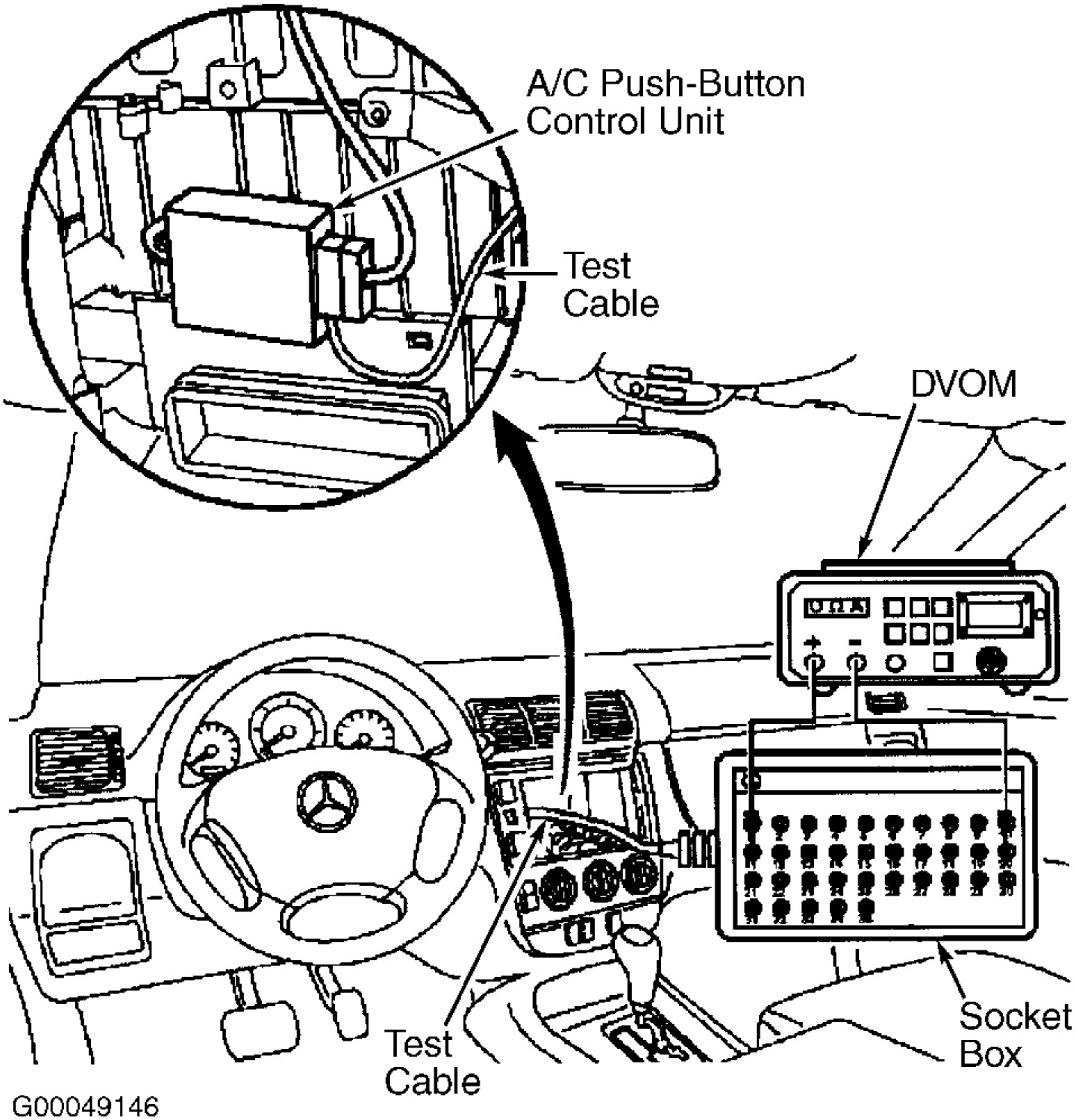


Fig. 3: Connecting Test Cable & Socket Box To A/C Push-Button Control Unit
Courtesy of MERCEDES-BENZ OF NORTH AMERICA.

FUNCTIONAL TEST PREPARATION

1. Check condition of fuses F16, F41, F43 and F44. See **WIRING DIAGRAMS** . Repair and/or replace fuses and necessary.
2. Turn ignition on. Locate in-vehicle temperature sensor aspirator blower vent grille above anti-theft indicator light. Place a half-inch square of tissue paper over aspirator blower vent grille. If paper stays on vent grille, go to next step. If paper does not stay on vent grille, correct insufficient aspirator blower ventilation.
3. Put shift lever in "P" and engage parking brake. Run engine at idle until it reaches normal operating temperature, about 176°F (80°C). Ensure ambient (outside) temperature is greater than 58°F (15°C).
4. Manually open center and side air outlets. Ensure recirculation button is not depressed. Set blower speed knob to position No. 1.

FUNCTION TEST

NOTE: Function test steps must be performed in order given.

Defrost Mode

To check operation in defrost mode, set temperature selector knob to White range (vertical). Set mode control knob to 12-o'clock position (vertical). Ensure A/C button indicator is illuminated. Air will vent from defrost and center outlets and A/C compressor will engage. If operation is not as specified, perform the following in order:

- Check voltage supply circuit Z50/2 between No. 16 fuse (15-amp) and connected components. See **VOLTAGE SUPPLY CIRCUIT Z50/2** under ELECTRICAL TESTS.
- Check ground circuit. See **GROUND CIRCUIT Z50/4** under ELECTRICAL TESTS.
- Check in-vehicle temperature sensor signal voltage. See **IN-VEHICLE TEMPERATURE SENSOR** under ELECTRICAL TESTS.
- Check in-vehicle temperature sensor signal resistance. See **IN-VEHICLE TEMPERATURE SENSOR** under ELECTRICAL TESTS.
- Check icing protection temperature sensor signal voltage. See **ICING PROTECTION TEMPERATURE SENSOR** under ELECTRICAL TESTS.
- Check icing protection temperature sensor resistance. See **ICING PROTECTION TEMPERATURE SENSOR** under ELECTRICAL TESTS.
- Check activation voltage during temperature reduction. See **ACTIVATION VOLTAGE TEMPERATURE** under ELECTRICAL TESTS.
- Check activation voltage during temperature increase. See **ACTIVATION VOLTAGE TEMPERATURE** under ELECTRICAL TESTS.
- Check blend air flap actuator motor operation voltage. See **BLEND AIR FLAP ACTUATOR MOTOR** under ELECTRICAL TESTS.
- Check blend air flap actuator motor resistance. See **BLEND AIR FLAP ACTUATOR MOTOR** under ELECTRICAL TESTS.
- Check A/C button activation. See **A/C BUTTON** under ELECTRICAL TESTS.
- Check A/C pressure switch. See **A/C REFRIGERANT PRESSURE SWITCH** under ELECTRICAL

TESTS.

Normal Ventilation In Regulating Mode

To check normal ventilation in regulating mode, set temperature selector knob to White range (vertical). Set mode control knob to 4-o'clock position. Ensure A/C button indicator is illuminated. Air will vent from upper and lower outlets and A/C compressor will engage. Ambient air will flow from center outlet and coolant circulation pump will operate. If operation is not as specified, perform the following in order:

- Check A/C button activation. See **A/C BUTTON** under ELECTRICAL TESTS.
- Check A/C pressure switch. See **A/C REFRIGERANT PRESSURE SWITCH** under ELECTRICAL TESTS.

Economy Setting Not In Heating Mode

To check economy setting without heating mode activated, set temperature selector knob to Blue range. Set mode control knob to the 9-o'clock position. Ensure A/C button indicator is not illuminated. Ambient air will flow from center outlet and A/C compressor will NOT be engaged. If operation is not as specified, perform the following:

- Check A/C button activation. See **A/C BUTTON** under ELECTRICAL TESTS.

Economy Setting In Heating Mode

To check economy setting with heating mode activated, set temperature selector knob to Red range. Set mode control knob to the 4-o'clock position. Ensure A/C button indicator is not illuminated. Heated air will flow from lower, upper and center outlets and A/C compressor will NOT be engaged. If operation is not as specified, perform the following:

- Check A/C button activation. See **A/C BUTTON** under ELECTRICAL TESTS.

Recirculation Mode

To check recirculation mode, press fresh/recirculation button. Ensure fresh/recirculation indicator is illuminated. Set blower speed knob to position No. 4. Blower fan noise will increase noticeably. If operation is not as specified, check wiring between recirculated air flap element, heater-A/C switch and No. 16 fuse (15-amp).

ELECTRICAL TESTS

Voltage Supply Circuit Z50/2

1. Connect socket box to A/C push button control unit and wiring harness. See **CONNECTING TEST EQUIPMENT** . Turn ignition on, with engine off. Connect voltmeter positive lead to socket box terminal No. 7 and negative lead to terminal No. 9.
2. Voltage should be 11-14 volts. If voltage is not as specified, check voltage supply circuit Z50/2 between No. 16 fuse (15-amp) and connected components. See **WIRING DIAGRAMS** . Repair as necessary.

Ground Circuit Z50/4

1. Connect socket box to A/C push button control unit wiring harness connector. See **CONNECTING TEST EQUIPMENT** . Turn ignition off. Ensure A/C push button control unit is not connected to socket box.
2. Connect ohmmeter positive lead to socket box terminal No. 9 and negative lead to body ground. Resistance should be zero. If resistance is not as specified, check control unit ground circuit Z50/4. See **WIRING DIAGRAMS** . Repair as necessary.

In-Vehicle Temperature Sensor

1. Connect socket box to A/C push button control unit and wiring harness. See **CONNECTING TEST EQUIPMENT** . Connect voltmeter positive lead to socket box terminal No. 12 and negative lead to terminal No. 9.
2. Turn ignition on. Turn temperature control knob to Red range detent. Voltage should be 1.9 volts at 68°F (20°C). If voltage is as specified, go to next step. If voltage is not as specified, check in-vehicle temperature sensor circuits. See **WIRING DIAGRAMS** . Repair as necessary. If circuits are okay, replace in-vehicle temperature sensor.
3. Turn ignition off. Disconnect test cable from A/C push button control unit. Connect ohmmeter positive lead to socket box terminal No. 2 and negative lead to terminal No. 12. Measure temperature sensor resistance at specified temperatures. See **IN-VEHICLE TEMPERATURE SENSOR RESISTANCE** table.
4. If resistance is not as specified, check wiring harness and connectors between A/C push button control unit, in-vehicle temperature sensor, blend air flap actuator position sensor and temperature regulator switch. Repair as necessary.

IN-VEHICLE TEMPERATURE SENSOR RESISTANCE

Sensor Temperature - °F (°C)	Ohms
68 (20)	2100
77 (25)	1700
104 (40)	900

Icing Protection Temperature Sensor

1. Connect socket box to A/C push button control unit and wiring harness. See **CONNECTING TEST EQUIPMENT** . Connect voltmeter positive lead to socket box terminal No. 11 and negative lead to terminal No. 9.
2. Turn ignition on. Voltage should be 2.0-2.4 volts at 32°F (0°C) and 1.4-1.8 volts at 59°F (15°C). If voltage is as specified, go to next step. If voltage is not as specified, check icing protection temperature sensor circuits. See **WIRING DIAGRAMS** . Repair as necessary. If circuits are okay, replace icing protection temperature sensor.
3. Turn ignition off. Disconnect test cable from A/C push button control unit. Connect ohmmeter positive lead to socket box terminal No. 3 and negative lead to terminal No. 11. Measure temperature sensor resistance at specified temperatures. See **ICING PROTECTION TEMPERATURE SENSOR RESISTANCE** table.

4. If resistance is not as specified, check wiring harness between temperature sensor and control unit. Repair as necessary. If wiring harness is okay, replace icing protection temperature sensor.

ICING PROTECTION TEMPERATURE SENSOR RESISTANCE

Sensor Temperature - °F (°C)	Ohms
43 (6)	3600
59 (15)	2300
72 (22)	1700
77 (25)	1500

Activation Voltage Temperature

1. Connect socket box to A/C push button control unit and wiring harness. See **CONNECTING TEST EQUIPMENT** . Connect voltmeter positive lead to socket box terminal No. 2 and negative lead to terminal No. 9.
2. Turn ignition on. Turn temperature control knob to Blue range detent. Voltage should be more than 2.0 volts. Turn temperature control knob from Blue range detent to Red range detent. Voltage should be more than 3.0 volts.
3. If voltage is as specified, go to next step. If voltage is not as specified, check recirculated air switch circuits. See **WIRING DIAGRAMS** . Repair as necessary. If circuits are okay, replace recirculated air switch.
4. Connect voltmeter positive lead to socket box terminal No. 5 and negative lead to terminal No. 9. Turn ignition on. Turn temperature control knob to Blue range detent. Voltage should be more than 3.0 volts. Turn temperature control knob from Blue range detent to Red range detent. Voltage should be more than 4.0 volts.
5. If voltage is not as specified, check recirculated air switch circuits. See **WIRING DIAGRAMS** . Repair as necessary. If circuits are okay, replace recirculated air switch.

Blend Air Flap Actuator Motor

1. Connect socket box to A/C push button control unit and wiring harness. See **CONNECTING TEST EQUIPMENT** . Connect voltmeter positive lead to socket box terminal No. 1 and negative lead to terminal No. 9.
2. Turn ignition on. Turn temperature control knob to Blue range detent. Voltage should be less than one volt. Turn temperature control knob from Blue range detent to Red range detent. Voltage should be 11.0-14.0 volts.
3. If voltage is as specified, go to next step. If voltage is not as specified, check blend air flap actuator motor wiring harness circuits. See **WIRING DIAGRAMS** . Repair as necessary. If circuits are okay, replace blend air flap actuator motor.
4. Connect voltmeter positive lead to socket box terminal No. 8 and negative lead to terminal No. 9. Turn ignition on. Turn temperature control knob to Red range detent. Voltage should be less than one volt. Turn temperature control knob from Red range detent to Blue range detent. Voltage should be 11.0-14.0 volts.
5. If voltage is as specified, go to next step. If voltage is not as specified, check blend air flap actuator motor wiring harness circuits. See **WIRING DIAGRAMS** . Repair as necessary. If circuits are okay, replace

blend air flap actuator motor.

6. Turn ignition off. Disconnect test cable from A/C push button control unit. Connect ohmmeter positive lead to socket box terminal No. 1 and negative lead to terminal No. 8. Resistance should be 120 ohms.
7. If resistance is not as specified, check blend air flap actuator motor circuits. See **WIRING DIAGRAMS** . Repair as necessary. If circuits are okay, replace blend air flap actuator motor.

A/C Button

1. Connect socket box to A/C push button control unit and wiring harness. See **CONNECTING TEST EQUIPMENT** . Connect voltmeter positive lead to socket box terminal No. 10 and negative lead to terminal No. 9.
2. Turn ignition on. Depress A/C button switch to on position and set blower speed knob to position No. 4. Ensure A/C button indicator is illuminated. Voltage should be less than one volt. Depress A/C button switch to off position with A/C button indicator not illuminated or set blower speed knob to off position. Voltage should be 11-14 volts.
3. If voltage is as specified, go to next step. If voltage is not as specified, check A/C button wiring harness circuits. See **WIRING DIAGRAMS** . Repair as necessary. If circuits are okay, replace A/C button switch.
4. Turn ignition on. Depress A/C button switch to on position and set blower speed knob to position No. 4. Ensure A/C button indicator is illuminated. Connect voltmeter positive lead to socket box terminal No. 4 and negative lead to terminal No. 9. Voltage should be more than 3.0 volts.
5. Connect Fused Jumper Wire (124 589 37 63 00) between socket box terminals No. 4 and 11. Depress A/C button switch to on position and set blower speed knob to position No. 4. Ensure A/C button indicator is illuminated. Measure voltage. Voltage should be less than one volt.
6. If voltage is not as specified, check A/C button wiring harness circuits. See **WIRING DIAGRAMS** . Repair as necessary. If circuits are okay, replace A/C button switch.

A/C Refrigerant Pressure Switch

1. Turn ignition off. Disconnect refrigerant pressure sensor connector. Turn ignition on. Connect voltmeter positive lead to pressure sensor harness connector terminal "B" (Pink wire) and negative lead to terminal "A" (Tan wire). Voltage should be 4.75-5.25 volts.
2. If voltage is as specified, replace A/C refrigerant pressure sensor. If voltage is not as specified, check wiring harness between refrigerant pressure sensor and All Activity Module (AAM). See **WIRING DIAGRAMS** . Repair as necessary. If circuits are okay, replace AAM and retest A/C system.

Outside Temperature Sensor

1. Connect socket box to A/C push button control unit and wiring harness. See **CONNECTING TEST EQUIPMENT** . Turn ignition off. Connect ohmmeter positive lead to socket box terminal No. 12 and negative lead to terminal No. 3.
2. Disconnect test cable from A/C push button control unit. See **OUTSIDE TEMPERATURE SENSOR RESISTANCE** table. If resistance is not as specified, check wiring harness between outside temperature sensor and A/C push button control unit. See **WIRING DIAGRAMS** . Repair as necessary. If wiring harness is okay, replace outside temperature sensor.

OUTSIDE TEMPERATURE SENSOR RESISTANCE

Sensor Temperature - °F (°C)	Ohms
68 (20)	2100
77 (25)	1700
104 (40)	900
122 (50)	600

READING ACTUAL VALUES WITH HHT

Connect Hand-Held Tester (HHT) to DLC and follow displayed procedures. Actual values displayed on HHT show normal operation value of A/C systems or components. See **ACTUAL VALUES** table. If value is not as specified, check system or components in order. Repair as necessary.

ACTUAL VALUES

Step (1)	Test Condition	Value	System/Component
01		11-14 Volts	Voltage Supply Wiring (Circuit No. 30) & Battery
02	Engine Operating At Normal Temperature	About 176°F (80°C)	Wiring, ECT Sensor & AAM
03	Ignition ON	Ambient Air Temperature About 68°F (20°C)	Wiring, Outside Temperature Sensor & AAM
04	Ignition ON, Blower At Stage 4	ON/OFF	Wiring, Blower Motor Relay, Blower Motor & AAM
05	Ignition ON	ON/OFF	Wiring, Engine Cooling Fan Stage 1, Aux. Fan & AAM
08	Ignition ON	ON/OFF	Wiring, Coolant Circulation Pump Relay, Coolant Circulation Pump & AAM
09	Engine On, A/C Indicator On, Blower Motor At Stage 4	Refrigerant Pressure At 174 psi (12 bar)	(2) Refrigerant Pressure Sensor
10	Engine On, A/C Indicator On, Blower Motor At Stage 4	ON/OFF	(3) AAM, A/C Compressor
11	Ignition ON, Activate A/C System	YES/NO	Wiring, A/C Push Button Control Module, AAM

(1) Step numbers not shown are not used.

(2) Check A/C refrigerant pressure switch. See **A/C REFRIGERANT PRESSURE SWITCH** under ELECTRICAL TESTS.

(3) Check A/C button activation. See **A/C BUTTON** under ELECTRICAL TESTS.

REMOVAL & INSTALLATION

WARNING: To avoid injury from accidental air bag deployment, read and carefully follow all SERVICE PRECAUTIONS and DISABLING & ACTIVATING AIR BAG SYSTEM procedures in AIR BAG SYSTEM SAFETY article in GENERAL SERVICING.

CAUTION: Before disconnecting battery, obtain 5-digit radio security code from vehicle owner. Radio will be disabled until properly recoded.

A/C EVAPORATOR HOUSING UNIT

Removal & Installation

1. Drain engine coolant. Remove coolant expansion reservoir nuts, disconnect hoses and remove reservoir. Discharge A/C system, using approved refrigerant recovery/recycling equipment.
2. Remove expansion valve self-locking nut and discard. See **Fig. 5** . Disconnect refrigerant lines from expansion valve. Plug exposed refrigerant lines to protect A/C system from moisture and debris.
3. Remove instrument panel. See **INSTRUMENT PANEL** . Remove Electronic Transmission Control (ETC) module. See **Fig. 4** . Disconnect air mix flap actuator connector.
4. Disconnect recirculated air flap element. Disconnect evaporator temperature sensor. Disconnect blower motor resistor and blower motor connectors. Remove A/C push button control module. Release wiring harness.
5. Remove insulating mat. See **Fig. 5** . Disconnect water drain hose from bottom of A/C housing. Release A/C housing-to-air distributor clips and remove A/C housing upward. To install, reverse removal procedure. Recode radio. See **RECODING RADIO** under PROGRAMMING.

Fig. 4: Removing Evaporator Housing Unit
Courtesy of MERCEDES-BENZ OF NORTH AMERICA.

A/C MIX FLAP ACTUATOR

Removal & Installation

Remove instrument panel. See **INSTRUMENT PANEL** . Disconnect air mix flap actuator connector. Remove 3 screws and remove air mix flap actuator. To install reverse removal procedure.

A/C PUSH BUTTON CONTROL MODULE

Removal & Installation

Disconnect negative battery cable. Remove A/C push button control panel. See **A/C PUSH BUTTON CONTROL PANEL** . Remove 4 A/C push button control module screws and remove control module from

A/C housing. Disconnect control module connector. To install reverse removal procedure. Recode 5-digit radio security code. Using HHT, check for DTC and erase, and set clock.

A/C PUSH BUTTON CONTROL PANEL

Removal & Installation

1. Obtain 5-digit radio security code from vehicle owner. Disconnect negative battery cable. Using radio removal plates, remove radio. Disconnect electrical connectors.
2. Remove instrument panel center section. Remove 4 A/C control panel screws and remove control panel. Release pull cables and disconnect connectors. To install, reverse removal procedure. Recode radio. See **RECODING RADIO** under PROGRAMMING.

BLOWER MOTOR

Removal & Installation

Remove passenger-side instrument panel under cover. Remove blower motor mounting screws from A/C housing unit. Disconnect blower motor connector and remove blower motor. To install, reverse removal procedure.

COMPRESSOR

NOTE: Each time A/C compressor is removed and installed, receiver-drier must be replaced.

Removal & Installation

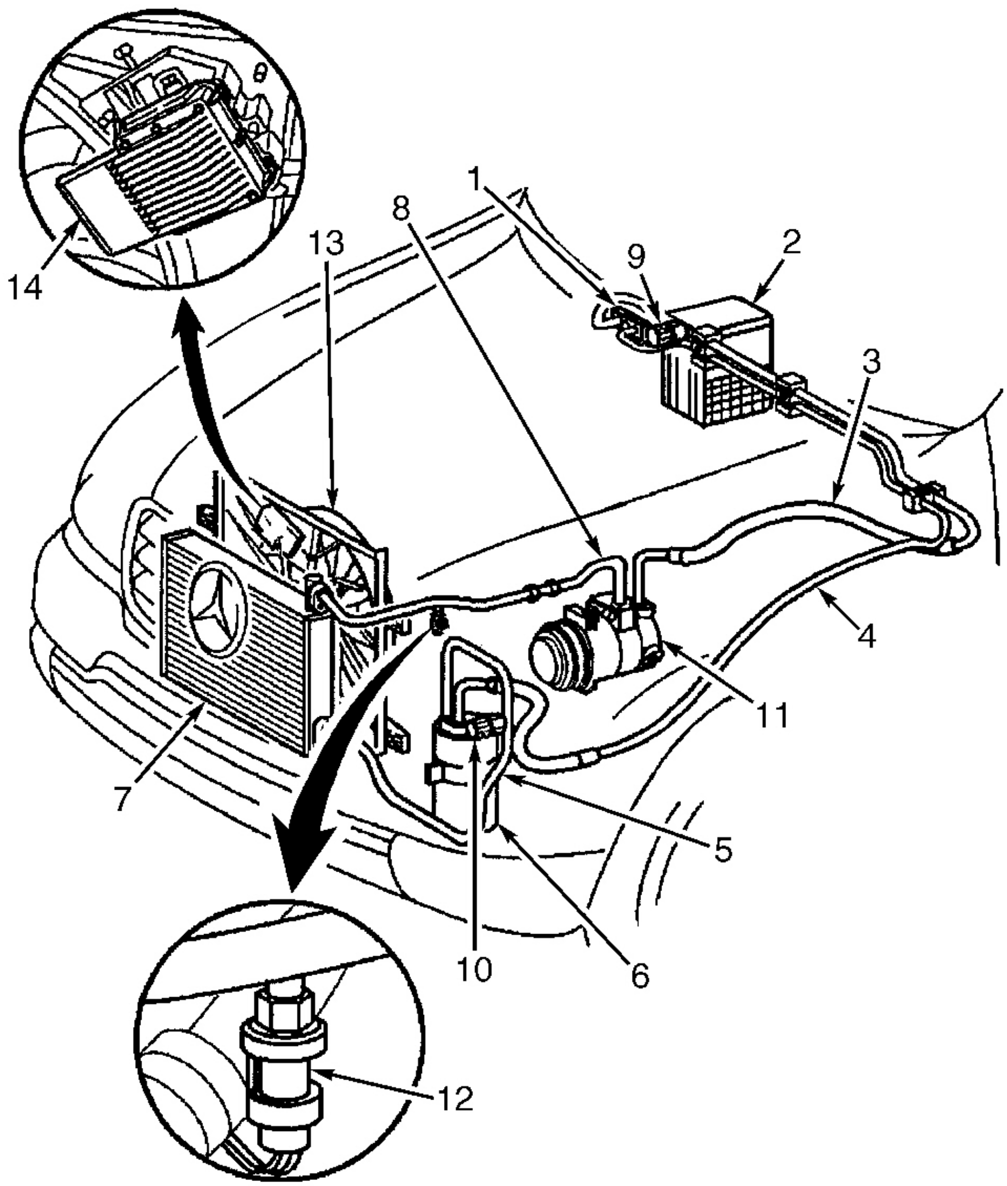
1. Discharge A/C system, using approved refrigerant recovery/recycling equipment. Remove accessory drive belt. Disconnect low pressure refrigerant line from compressor. Discard "O" rings. Plug exposed openings to protect A/C system from debris and moisture.
2. Disconnect high pressure refrigerant line from compressor. Discard "O" rings. Plug exposed openings to protect A/C system from debris and moisture. Disconnect electrical connector. Remove compressor mounting bolts.
3. Raise and support vehicle. Remove compressor from under vehicle without spilling refrigerant oil. To install, reverse removal procedure. Ensure refrigerant oil quantity in compressor is correct. See COMPRESSOR REFRIGERANT OIL CHECKING under GENERAL SERVICING. Tighten bolts to specification. See **TORQUE SPECIFICATIONS** .

CONDENSER

Removal & Installation

1. Discharge A/C system, using approved refrigerant recovery/recycling equipment. Remove cooling fans. See **COOLING FANS** . Disconnect refrigerant line from receiver-drier. See **Fig. 5** . Discard "O" rings.
2. Plug exposed openings to protect A/C system from debris and moisture. Remove refrigerant line from condenser. Remove radiator upper rubber seal. See **Fig. 6** . Remove condenser upper mounting screws. Lift condenser upward and remove.

3. To install, reverse removal procedure. Use NEW "O" rings lubricated with refrigerant oil. If installing a new or repaired condenser, add 0.68 ounce of NEW refrigerant oil to condenser. Tighten refrigerant line bolts to specification. See **TORQUE SPECIFICATIONS** .



1. Expansion Valve
2. Evaporator
3. Suction Line
4. High Pressure Line-To-Evaporator
5. High Pressure Line-To- Receiver-Drier
6. Receiver-Drier
7. Condenser
8. High Pressure Line-To-Condenser
9. Low Pressure Charge Port
10. High Pressure Charge Port
11. A/C Compressor

Fig. 5: Locating A/C Refrigerant System Components
Courtesy of MERCEDES-BENZ OF NORTH AMERICA.

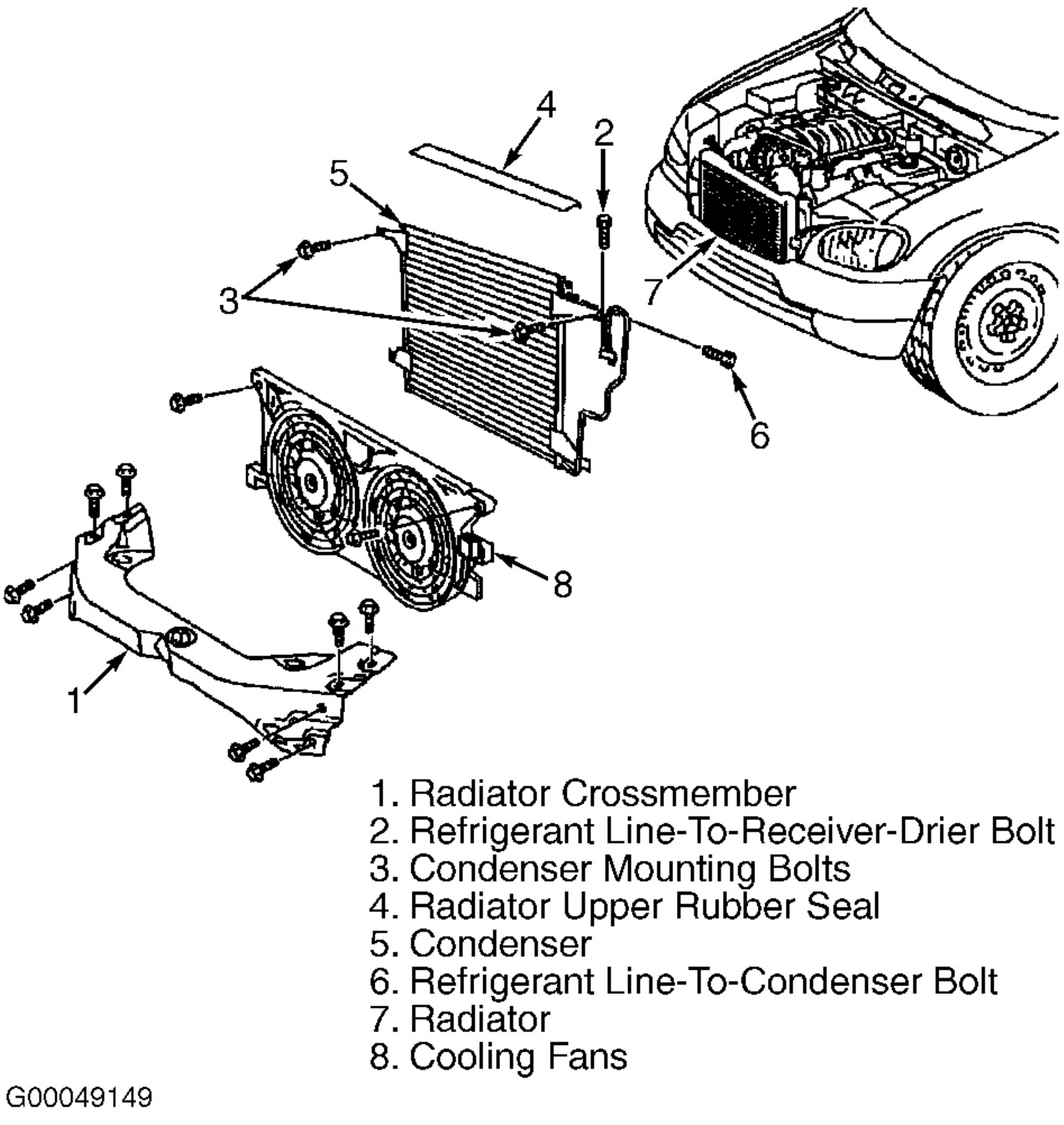


Fig. 6: Removing Cooling Fans & Condenser
Courtesy of MERCEDES-BENZ OF NORTH AMERICA.

COOLING FANS

Removal & Installation

Remove headlight units. Remove upper frame crossmember, release hood release control cable and remove crossmember. See **Fig. 6** . Remove 2 cooling fans frame bolts on radiator. Disconnect cooling fan connector. Release outside temperature sensor wiring harness. Pull up on cooling fan and remove. To install, reverse removal procedure. Ensure cooling fan bottom guides are properly seated in lower mounts.

EVAPORATOR

Removal & Installation

Remove A/C housing unit. See **A/C HOUSING UNIT** . Remove expansion valve. See **Fig. 5** . Discard "O" rings. Disassemble A/C housing unit. Remove evaporator. Remove evaporator temperature sensor. To install, reverse removal procedure. Use NEW "O" rings lubricated with refrigerant oil. If installing a new or repair evaporator, add 1.35 ounces of NEW refrigerant oil to evaporator.

EXPANSION VALVE

Removal & Installation

1. Discharge A/C system, using approved refrigerant recovery/recycling equipment. Without disconnecting coolant hoses, remove coolant expansion reservoir and set aside. Remove refrigerant line bracket and loosen clamps. See **Fig. 5** . Pull refrigerant lines out of expansion valve.
2. Remove expansion valve self-locking nut and discard. Remove expansion valve. Discard "O" rings. To install, reverse removal procedure. Use NEW "O" rings lubricated with refrigerant oil. Tighten NEW self-locking nut to specification. See **TORQUE SPECIFICATIONS** .

INSTRUMENT PANEL & INSTRUMENT PANEL CARRIER

Removal & Installation

1. Secure vehicle against rolling. Set transmission selector to "D" position. Obtain radio security code. Disconnect negative battery cable. Remove driver-side air bag.
2. Place match marks on steering wheel and steering shaft. Remove steering wheel, upper steering column covers and combination switch. Remove instrument cluster cover frame. Remove one instrument panel lower section bolt.
3. Remove screws in footwell from left side of instrument panel bottom section. Remove instrument panel center section. Remove 4 A/C control panel screws and remove control panel. See **Fig. 1** . Release pull cables and disconnect connectors.
4. Remove screws from center section. Remove glove box. Remove screws in footwell from right side of instrument panel bottom section. Remove entry courtesy lights. Remove end covers and screws.
5. Release 4 "A" clips between instrument panel bottom section and upper section. See **Fig. 7** . Release parking brake release cable from handle. With assistance, remove instrument panel bottom section.

6. Remove A-pillar panel trim. Remove instrument cluster. Remove defroster vent cover. Remove air vents and side air nozzles. With assistance, remove upper instrument panel.
7. Remove passenger-side air bag. Remove right side lower instrument panel cover. Remove instrument panel carrier screws from A/C housing unit. Remove left side lower instrument panel cover.
8. Remove insulating mat between steering column and instrument panel carrier. Remove steering column bolts and nuts from instrument panel carrier. See **Fig. 8** . Remove instrument panel carrier center tunnel bolts. Disconnect steering column connectors.
9. Remove wiring harness from instrument panel carrier. Remove wiper washer system. Remove instrument panel carrier nuts from engine compartment side of firewall.
10. Remove A-pillar bolt covers and remove instrument panel carrier A-pillar bolts. With assistance, remove instrument panel carrier through passenger door. To install, reverse removal procedure.
11. Ensure instrument panel bottom section guide tongues "B" are seated into instrument panel upper section mounts. See **Fig. 8** . Tighten nuts and bolts to specification. See **TORQUE SPECIFICATIONS** . Recode radio. See **RECODING RADIO** under PROGRAMMING.

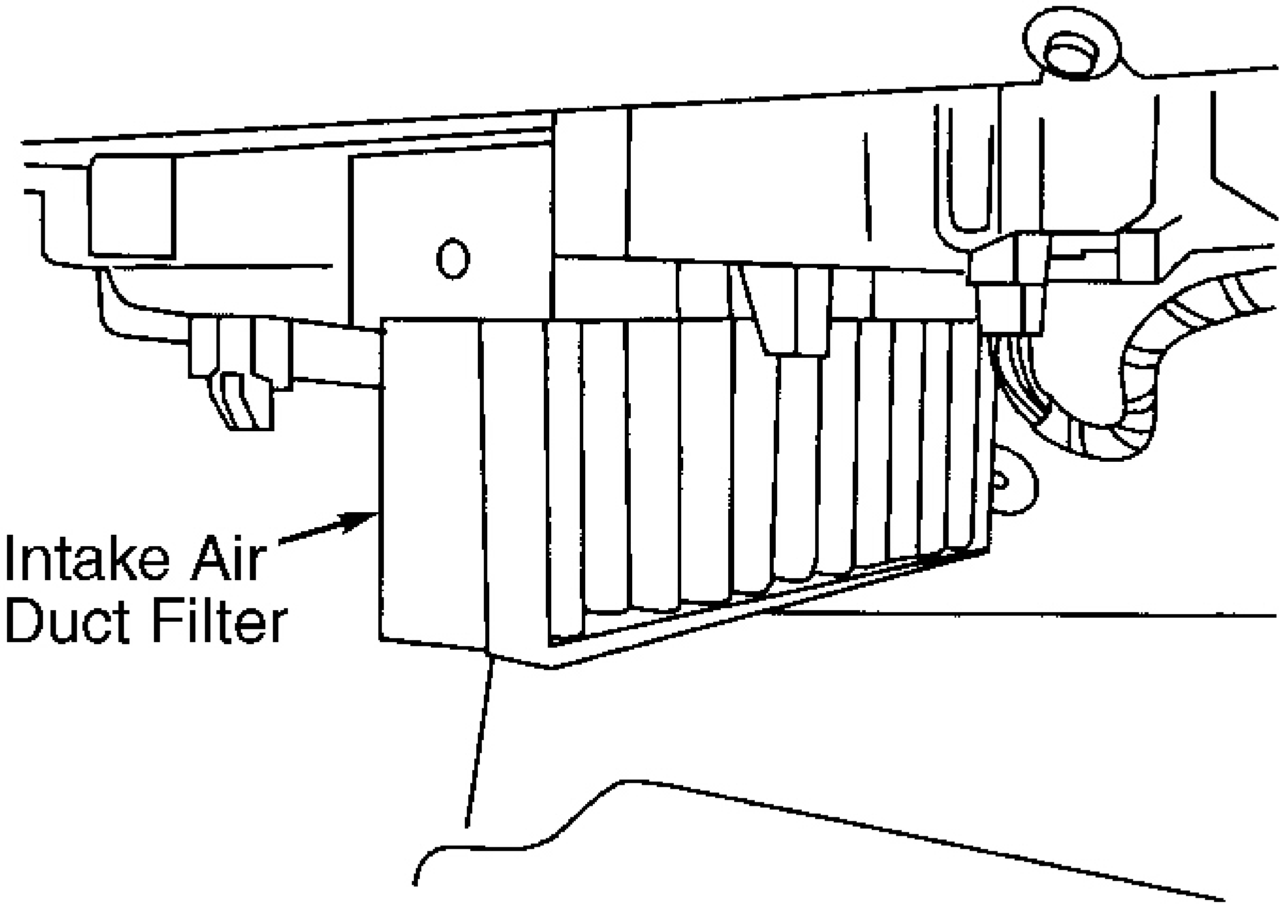
Fig. 7: Removing Instrument Panel Bottom Section
Courtesy of MERCEDES-BENZ OF NORTH AMERICA.

Fig. 8: Removing Instrument Panel Upper Section & Instrument Panel Carrier
Courtesy of MERCEDES-BENZ OF NORTH AMERICA.

INTAKE AIR DUST FILTER

Removal & Installation

Remove passenger-side instrument panel lower trim panel. Release retaining clip and remove dust filter cover. Pull dust filter down and out. See **Fig. 9** . To install, reverse removal procedure.


Intake Air
Duct Filter

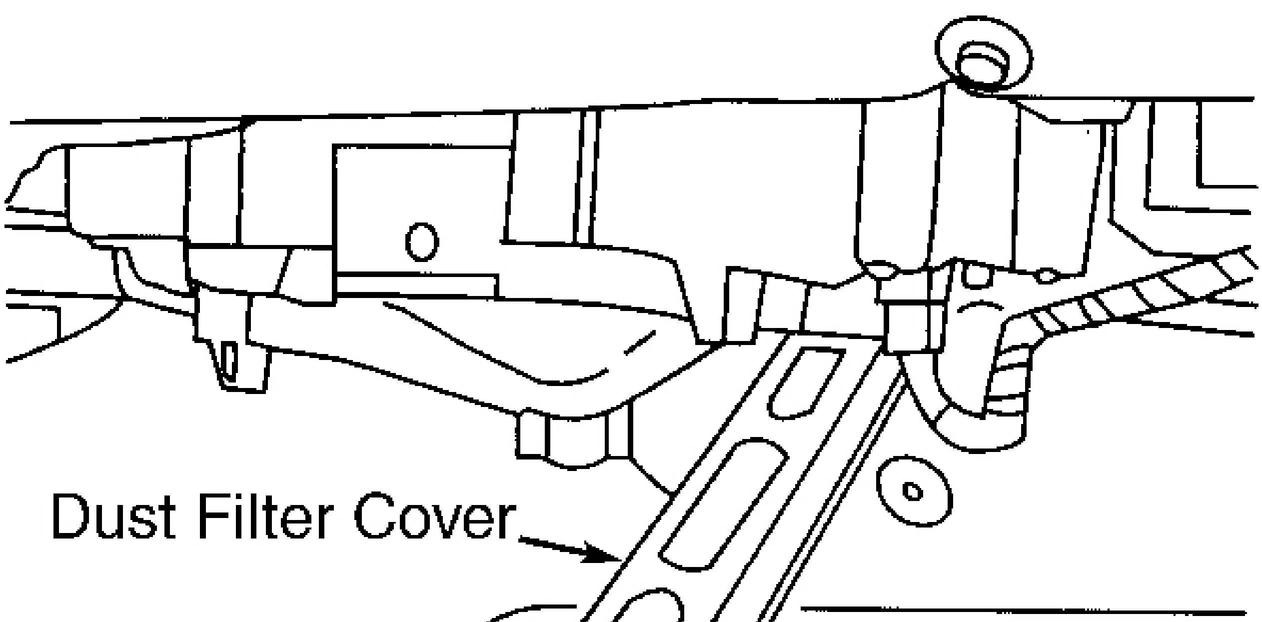

Dust Filter Cover

Fig. 9: Replacing Intake Air Dust Filter
Courtesy of MERCEDES-BENZ OF NORTH AMERICA.

RECEIVER-DRIER

Removal & Installation

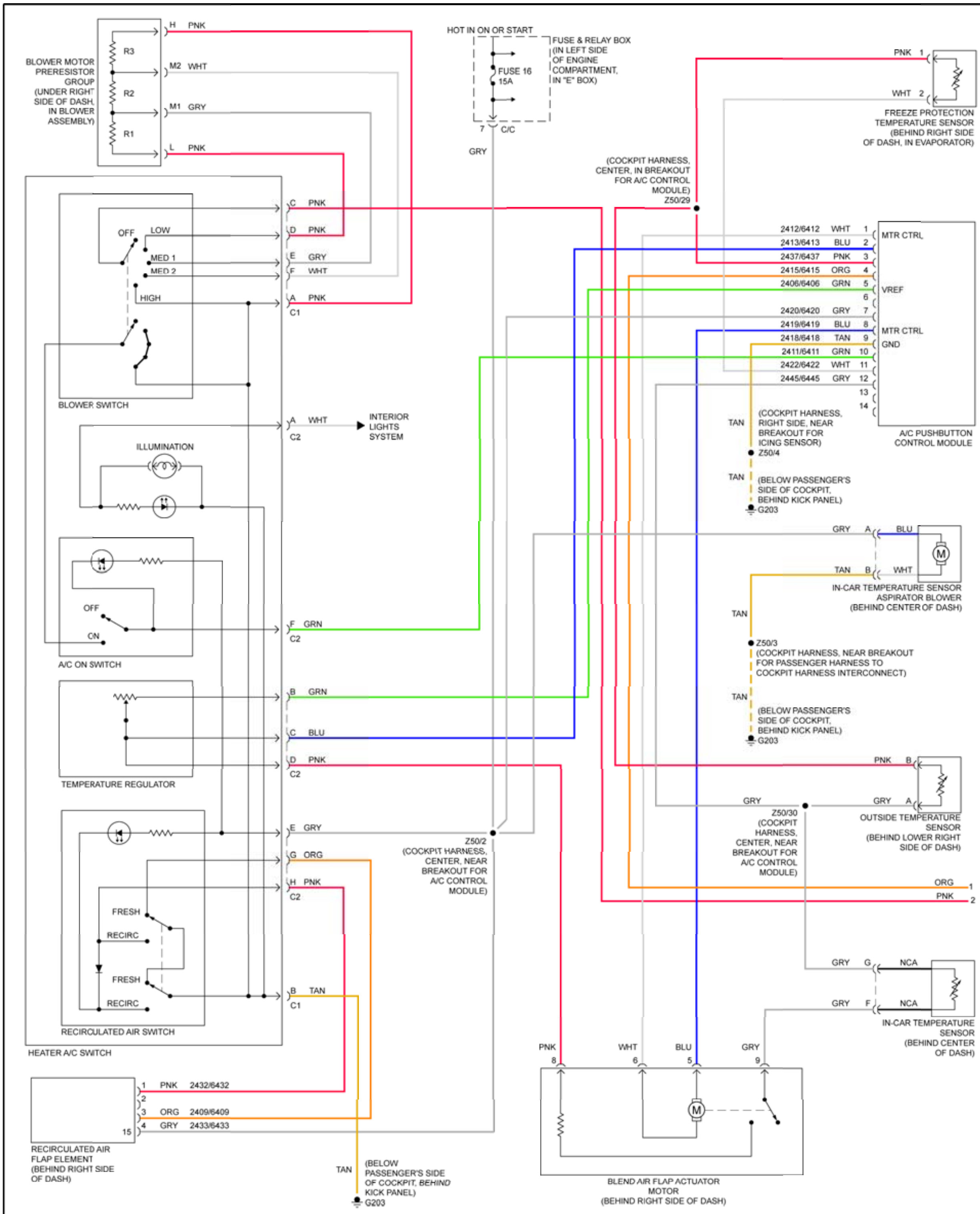
1. Discharge A/C system, using approved refrigerant recovery/recycling equipment. Remove headlight units. Remove headlight units. Remove upper frame crossmember, release hood release control cable and remove crossmember. See **Fig. 6** .
2. Remove bolts from receiver-drier refrigerant lines. See **Fig. 5** . Disconnect refrigerant lines from receiver-drier. Plug exposed openings to protect A/C system from debris and moisture. Discard "O" rings. Loosen receiver-drier clamp bolt. Remove receiver-drier. To install, reverse removal procedure.
3. When installing a new receiver-drier, add 0.34 ounce of NEW refrigerant oil to receiver-drier. Use NEW "O" rings. Tighten refrigerant line bolts to specification. See **TORQUE SPECIFICATIONS** .

TORQUE SPECIFICATIONS

TORQUE SPECIFICATIONS

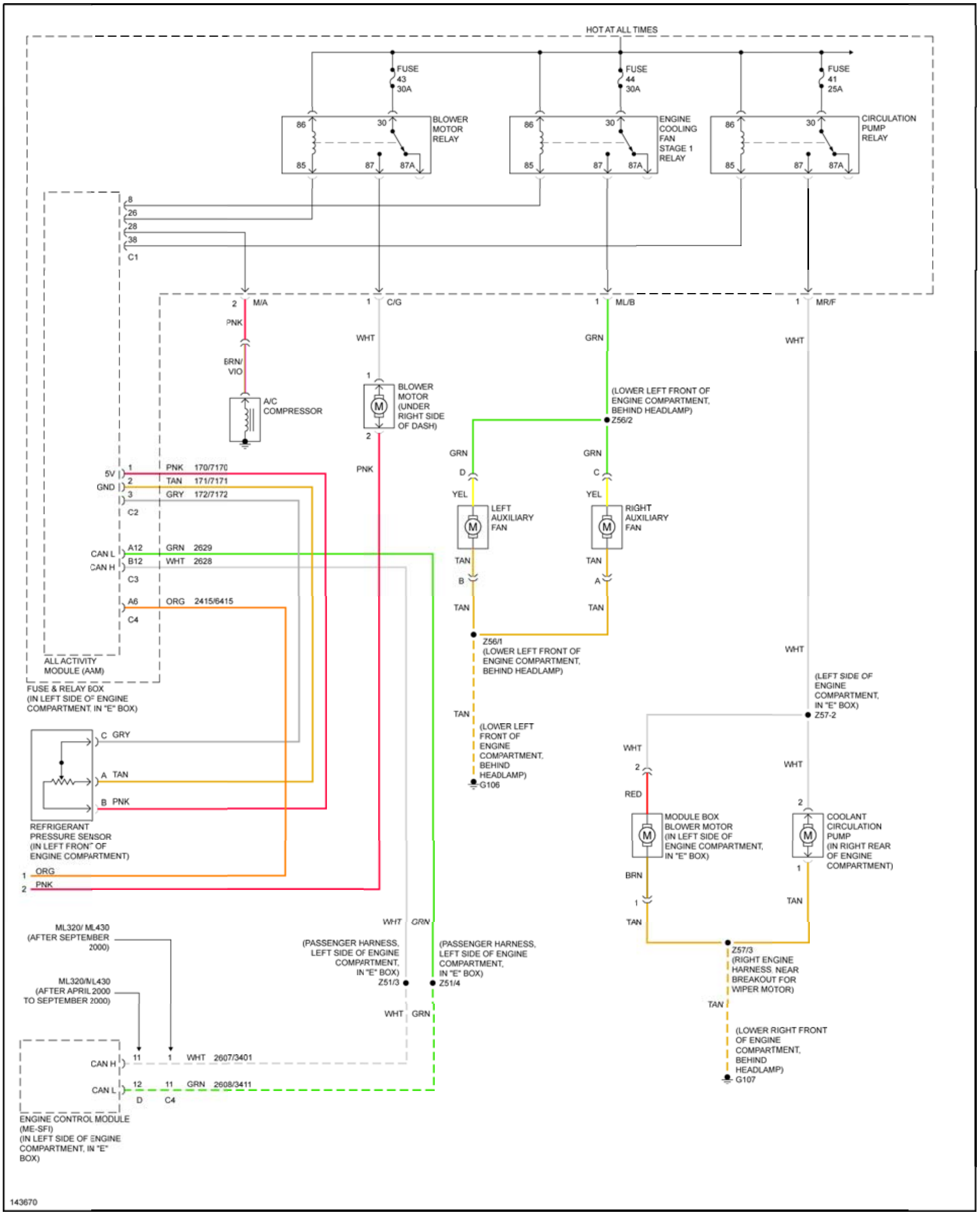
Application	**Ft. Lbs. (N.m)**
Compressor Mounting Bolts	15 (20)
Refrigerant Line-To-Compressor Bolt	15 (20)
Refrigerant Line-To-Condenser Bolt	15 (20)
Steering Column Bolt	15 (20)
Steering Column Nut	13 (18)
	INCH Lbs. (N.m)
Expansion Valve Self-Locking Nut	89 (10)
Refrigerant Line-To-Receiver-Drier Bolt	89 (10)

WIRING DIAGRAMS



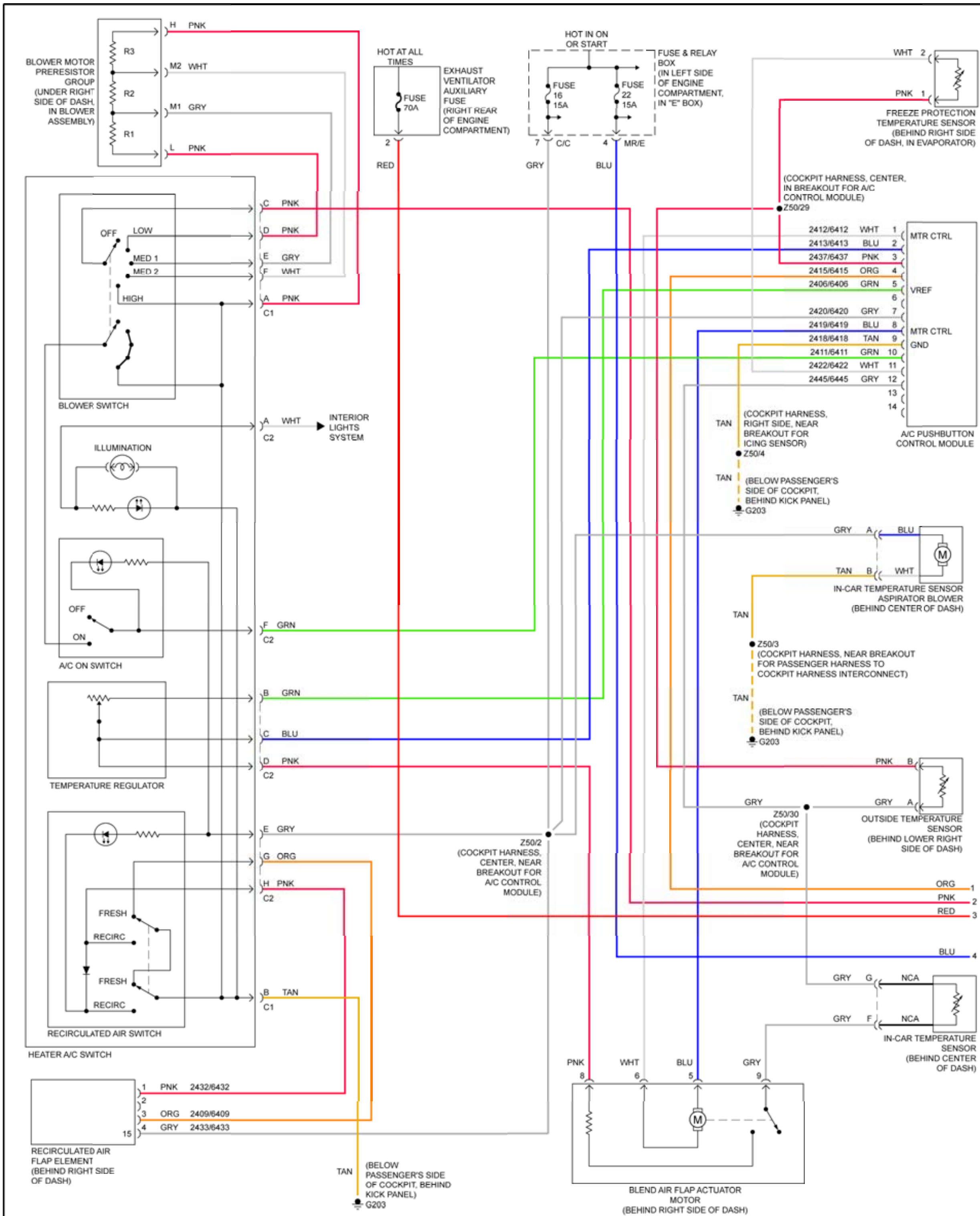
BLOWER MOTOR PRERESISTOR GROUP (UNDER RIGHT SIDE OF DASH, IN BLOWER ASSEMBLY)
R3
R2
R1
H PNK
M2 WHT
M1 GRY
L PNK
HOT IN ON OR START
FUSE 16 15A
FUSE & RELAY BOX (IN LEFT SIDE OF ENGINE COMPARTMENT, IN "E" BOX)
7 C/C
GRY
PNK 1
WHT 2
FREEZE PROTECTION TEMPERATURE SENSOR (BEHIND RIGHT SIDE OF DASH, IN EVAPORATOR)
(COCKPIT HARNESS, CENTER, IN BREAKOUT FOR A/C CONTROL MODULE) Z50/29
OFF
LOW
MED 1
MED 2
HIGH
C PNK
D PNK
E GRY
F WHT
A PNK
C1
BLOWER SWITCH
2412/6412 WHT 1
2413/6413 BLU 2
2437/6437 PNK 3
2415/6415 ORG 4
2406/6406 GRN 5
6
2420/6420 GRY 7
2419/6419 BLU 8
2418/6418 TAN 9
2411/6411 GRN 10
2422/6422 WHT 11
2445/6445 GRY 12
13
14
MTR CTRL
VREF
MTR CTRL
GND
A/C PUSHBUTTON CONTROL MODULE
A WHT
C2
INTERIOR LIGHTS SYSTEM
ILLUMINATION
TAN
(COCKPIT HARNESS, RIGHT SIDE, NEAR BREAKOUT FOR ICING SENSOR) Z50/4
TAN
(BELOW PASSENGER'S SIDE OF COCKPIT, BEHIND KICK PANEL) G203
GRY A
BLU
TAN B
WHT
IN-CAR TEMPERATURE SENSOR ASPIRATOR BLOWER (BEHIND CENTER OF DASH)
OFF
ON
A/C ON SWITCH
F GRN
C2
TAN
Z50/3 (COCKPIT HARNESS, NEAR BREAKOUT FOR PASSENGER HARNESS TO COCKPIT HARNESS INTERCONNECT)
TAN
(BELOW PASSENGER'S SIDE OF COCKPIT, BEHIND KICK PANEL) G203
B GRN
C BLU
D PNK
C2
TEMPERATURE REGULATOR
PNK B
GRY
GRY A
Z50/30 (COCKPIT HARNESS, CENTER, NEAR BREAKOUT FOR A/C CONTROL MODULE)
OUTSIDE TEMPERATURE SENSOR (BEHIND LOWER RIGHT SIDE OF DASH)
E GRY
G ORG
H PNK
C2
Z50/2 (COCKPIT HARNESS, CENTER, NEAR BREAKOUT FOR A/C CONTROL MODULE)
ORG 1
PNK 2
FRESH
RECIRC
FRESH
RECIRC
B TAN
C1
RECIRCULATED AIR SWITCH
HEATER A/C SWITCH
GRY G
NCA
GRY F
NCA
IN-CAR TEMPERATURE SENSOR (BEHIND CENTER OF DASH)
PNK 8
WHT 6
BLU 5
GRY 9
M
BLEND AIR FLAP ACTUATOR MOTOR (BEHIND RIGHT SIDE OF DASH)
1 PNK 2432/6432
2
3 ORG 2409/6409
15
4 GRY 2433/6433
RECIRCULATED AIR FLAP ELEMENT (BEHIND RIGHT SIDE OF DASH)
TAN
(BELOW PASSENGER'S SIDE OF COCKPIT, BEHIND KICK PANEL) G203
143669

Fig. 10: Manual A/C-Heater Systems Wiring Diagram (2000-01 ML 320 Without Cooling Fan Control Module - 1 Of 2)



HOT AT ALL TIMES
FUSE 43 30A
FUSE 44 30A
FUSE 41 25A
BLOWER MOTOR RELAY
ENGINE COOLING FAN STAGE 1 RELAY
CIRCULATION PUMP RELAY
A/C COMPRESSOR
BLOWER MOTOR (UNDER RIGHT SIDE OF DASH)
(LOWER LEFT FRONT OF ENGINE COMPARTMENT, BEHIND HEADLAMP)
Z56/2
LEFT AUXILIARY FAN
RIGHT AUXILIARY FAN
Z56/1 (LOWER LEFT FRONT OF ENGINE COMPARTMENT, BEHIND HEADLAMP)
(LOWER LEFT FRONT OF ENGINE COMPARTMENT, BEHIND HEADLAMP)
G106
ALL ACTIVITY MODULE (AAM)
FUSE & RELAY BOX (IN LEFT SIDE OF ENGINE COMPARTMENT, IN "E" BOX)
PNK 170/7170
TAN 171/7171
GRY 172/7172
GRN 2629
WHT 2628
ORG 2415/6415
REFRIGERANT PRESSURE SENSOR (IN LEFT FRONT OF ENGINE COMPARTMENT)
(LEFT SIDE OF ENGINE COMPARTMENT, IN "E" BOX)
Z57-2
MODULE BOX BLOWER MOTOR (IN LEFT SIDE OF ENGINE COMPARTMENT, IN "E" BOX)
COOLANT CIRCULATION PUMP (IN RIGHT REAR OF ENGINE COMPARTMENT)
Z57/3 (RIGHT ENGINE HARNESS, NEAR BREAKOUT FOR WIPER MOTOR)
(LOWER RIGHT FRONT OF ENGINE COMPARTMENT, BEHIND HEADLAMP)
G107
ML320/ ML430 (AFTER SEPTEMBER 2000)
ML320/ML430 (AFTER APRIL 2000 TO SEPTEMBER 2000)
(PASSENGER HARNESS, LEFT SIDE OF ENGINE COMPARTMENT, IN "E" BOX) Z51/3
(PASSENGER HARNESS, LEFT SIDE OF ENGINE COMPARTMENT, IN "E" BOX) Z51/4
WHT 2607/3401
GRN 2608/3411
ENGINE CONTROL MODULE (ME-SFI) (IN LEFT SIDE OF ENGINE COMPARTMENT, IN "E" BOX)
143670

Fig. 11: Manual A/C-Heater Systems Wiring Diagram (2000-01 ML 320 Without Cooling Fan Control Module - 2 Of 2)



BLOWER MOTOR PRERESISTOR GROUP (UNDER RIGHT SIDE OF DASH, IN BLOWER ASSEMBLY)
R3
R2
R1
H PNK
M2 WHT
M1 GRY
L PNK
HOT AT ALL TIMES
FUSE 70A
EXHAUST VENTILATOR AUXILIARY FUSE (RIGHT REAR OF ENGINE COMPARTMENT)
2
RED
HOT IN ON OR START
FUSE 16 15A
FUSE 22 15A
FUSE & RELAY BOX (IN LEFT SIDE OF ENGINE COMPARTMENT, IN "E" BOX)
7 C/C
4 MR/E
GRY
BLU
WHT 2
PNK 1
FREEZE PROTECTION TEMPERATURE SENSOR (BEHIND RIGHT SIDE OF DASH, IN EVAPORATOR)
(COCKPIT HARNESS, CENTER, IN BREAKOUT FOR A/C CONTROL MODULE)
Z50/29
2412/6412 WHT 1
2413/6413 BLU 2
2437/6437 PNK 3
2415/6415 ORG 4
2406/6406 GRN 5
6
2420/6420 GRY 7
2419/6419 BLU 8
2418/6418 TAN 9
2411/6411 GRN 10
2422/6422 WHT 11
2445/6445 GRY 12
13
14
MTR CTRL
VREF
MTR CTRL
GND
A/C PUSHBUTTON CONTROL MODULE
OFF
LOW
MED 1
MED 2
HIGH
BLOWER SWITCH
C PNK
D PNK
E GRY
F WHT
A PNK
C1
A WHT
C2
INTERIOR LIGHTS SYSTEM
ILLUMINATION
OFF
ON
A/C ON SWITCH
F GRN
C2
TEMPERATURE REGULATOR
B GRN
C BLU
D PNK
C2
E GRY
G ORG
H PNK
C2
FRESH
RECIRC
FRESH
RECIRC
RECIRCULATED AIR SWITCH
B TAN
C1
HEATER A/C SWITCH
TAN
(COCKPIT HARNESS, RIGHT SIDE, NEAR BREAKOUT FOR ICING SENSOR)
Z50/4
TAN
(BELOW PASSENGER'S SIDE OF COCKPIT, BEHIND KICK PANEL)
G203
GRY A
BLU
TAN B
WHT
IN-CAR TEMPERATURE SENSOR ASPIRATOR BLOWER (BEHIND CENTER OF DASH)
TAN
Z50/3
(COCKPIT HARNESS, NEAR BREAKOUT FOR PASSENGER HARNESS TO COCKPIT HARNESS INTERCONNECT)
TAN
(BELOW PASSENGER'S SIDE OF COCKPIT, BEHIND KICK PANEL)
G203
PNK B
GRY
GRY A
Z50/30 (COCKPIT HARNESS, CENTER, NEAR BREAKOUT FOR A/C CONTROL MODULE)
OUTSIDE TEMPERATURE SENSOR (BEHIND LOWER RIGHT SIDE OF DASH)
Z50/2 (COCKPIT HARNESS, CENTER, NEAR BREAKOUT FOR A/C CONTROL MODULE)
ORG 1
PNK 2
RED 3
BLU 4
GRY G
NCA
GRY F
NCA
IN-CAR TEMPERATURE SENSOR (BEHIND CENTER OF DASH)
PNK 8
WHT 6
BLU 5
GRY 9
BLEND AIR FLAP ACTUATOR MOTOR (BEHIND RIGHT SIDE OF DASH)
1 PNK 2432/6432
2
3 ORG 2409/6409
15
4 GRY 2433/6433
RECIRCULATED AIR FLAP ELEMENT (BEHIND RIGHT SIDE OF DASH)
TAN
(BELOW PASSENGER'S SIDE OF COCKPIT, BEHIND KICK PANEL)
G203
143731

Fig. 12: Automatic A/C-Heater Systems Wiring Diagram (2000-01 ML 320 & ML 430 With Cooling Fan Control Module - 1 Of 2)

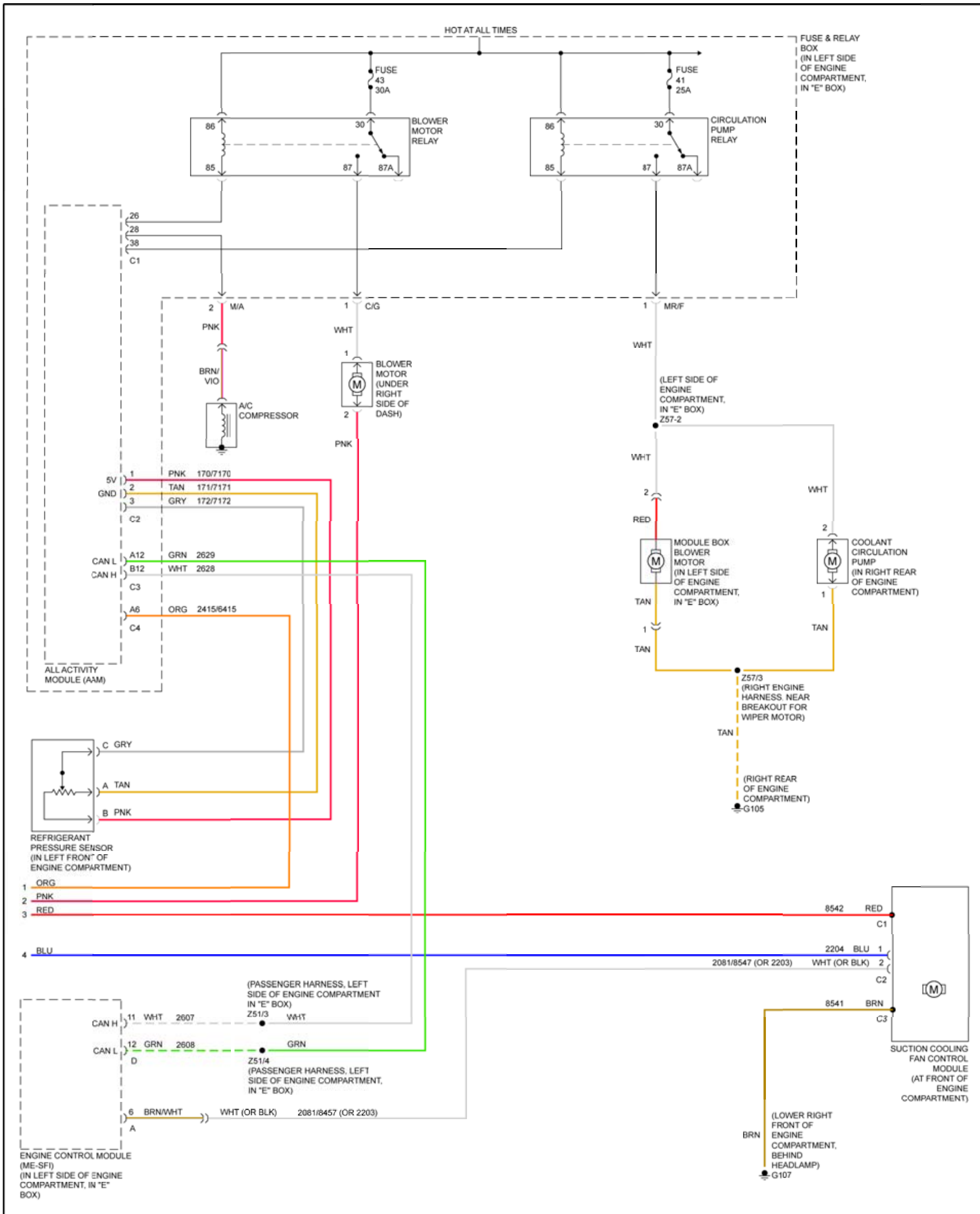

HOT AT ALL TIMES
FUSE & RELAY BOX (IN LEFT SIDE OF ENGINE COMPARTMENT, IN "E" BOX)
FUSE 43 30A
FUSE 41 25A
BLOWER MOTOR RELAY
CIRCULATION PUMP RELAY
A/C COMPRESSOR
BLOWER MOTOR (UNDER RIGHT SIDE OF DASH)
(LEFT SIDE OF ENGINE COMPARTMENT, IN "E" BOX) Z57-2
MODULE BOX BLOWER MOTOR (IN LEFT SIDE OF ENGINE COMPARTMENT, IN "E" BOX)
COOLANT CIRCULATION PUMP (IN RIGHT REAR OF ENGINE COMPARTMENT)
Z57/3 (RIGHT ENGINE HARNESS NEAR BREAKOUT FOR WIPER MOTOR)
(RIGHT REAR OF ENGINE COMPARTMENT) G105
ALL ACTIVITY MODULE (AAM)
REFRIGERANT PRESSURE SENSOR (IN LEFT FRONT OF ENGINE COMPARTMENT)
(PASSENGER HARNESS, LEFT SIDE OF ENGINE COMPARTMENT IN "E" BOX) Z51/3
Z51/4 (PASSENGER HARNESS, LEFT SIDE OF ENGINE COMPARTMENT, IN "E" BOX)
ENGINE CONTROL MODULE (ME-SFI) (IN LEFT SIDE OF ENGINE COMPARTMENT, IN "E" BOX)
SUCTION COOLING FAN CONTROL MODULE (AT FRONT OF ENGINE COMPARTMENT)
(LOWER RIGHT FRONT OF ENGINE COMPARTMENT, BEHIND HEADLAMP) G107
143732

Fig. 13: Automatic A/C-Heater Systems Wiring Diagram (2000-01 ML 320 & ML 430 With Cooling Fan Control Module - 2 Of 2)